TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

# 2SK170

### Low Noise Audio Amplifier Applications

Unit: mm

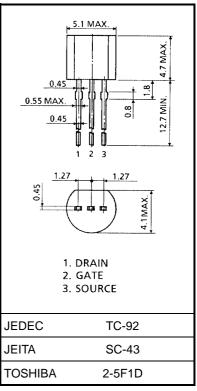
- Recommended for first stages of EQ and M.C. head amplifiers.
- High  $|Y_{fs}|$ :  $|Y_{fs}| = 22$  mS (typ.) (VDS = 10 V, VGS = 0, IDSS = 3 mA)
- High breakdown voltage:  $V_{GDS} = -40 \text{ V}$
- Low noise:  $E_n = 0.95 \text{ nV/Hz}^{1/2} \text{ (typ.)}$

 $(V_{DS} = 10 \text{ V}, I_{D} = 1 \text{ mA}, f = 1 \text{ kHz})$ 

• High input impedance:  $I_{GSS} = -1 \text{ nA (max) (V}_{GS} = -30 \text{ V)}$ 

# **Maximum Ratings (Ta = 25°C)**

Characteristics	Symbol	Rating	Unit
Gate-drain voltage	$V_{GDS}$	-40	V
Gate current	IG	10	mA
Drain power dissipation	P <sub>D</sub>	400	mW
Junction temperature	Tj	125	°C
Storage temperature range	T <sub>stg</sub>	-55~125	°C

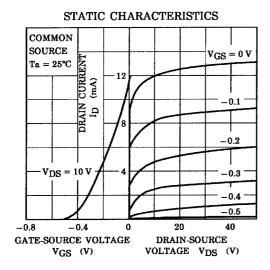


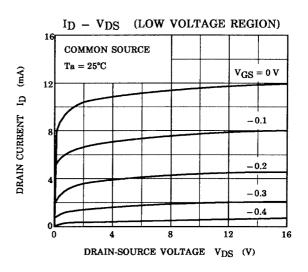
Weight: 0.21 g (typ.)

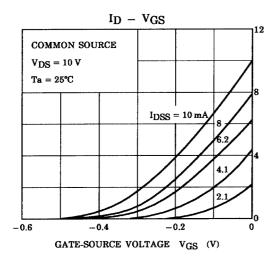
## **Electrical Characteristics (Ta = 25°C)**

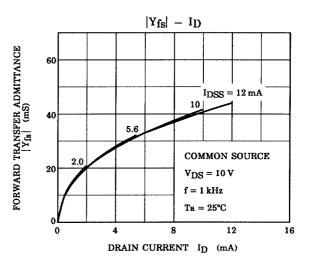
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate cut-off current	I <sub>GSS</sub>	$V_{GS} = -30 \text{ V}, V_{DS} = 0$	_	_	-1.0	nA
Gate-drain breakdown voltage	V (BR) GDS	$V_{DS} = 0, I_G = -100 \mu A$	-40		_	٧
Drain current	I <sub>DSS</sub> (Note)	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0	2.6	_	20	mA
Gate-source cut-off voltage	V <sub>GS</sub> (OFF)	$V_{DS} = 10 \text{ V}, I_D = 0.1  \mu\text{A}$	-0.2	_	-1.5	V
Forward transfer admittance	Y <sub>fs</sub>	$V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ kHz}$	_	22	_	mS
Input capacitance	C <sub>iss</sub>	$V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	_	30	_	pF
Reverse transfer capacitance	C <sub>rss</sub>	$V_{DG} = 10 \text{ V}, I_D = 0, f = 1 \text{ MHz}$	_	6	_	pF
Noise figure —	NF (1)	$V_{DS}$ = 10 V, $I_{D}$ = 1.0 mA, $R_{G}$ = 1 k $\Omega$ , $f$ = 1 kHz	_	1.0	10	dB
	NF (2)	$V_{DS}$ = 10 V, $I_{D}$ = 1.0 mA, $R_{G}$ = 1 k $\Omega$ , $f$ = 1 kHz	_	0.5	2	

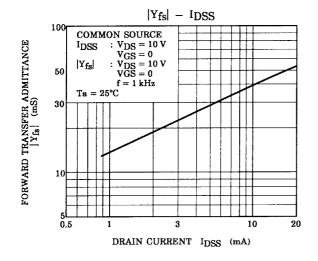
Note: IDSS classification GR: 2.6~6.5 mA, BL: 6.0~12 mA, V: 10~20 mA

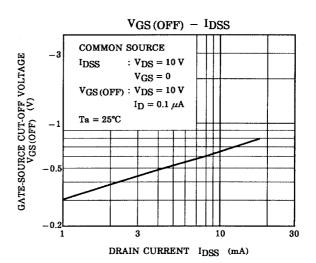




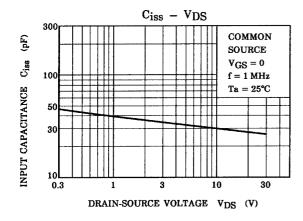


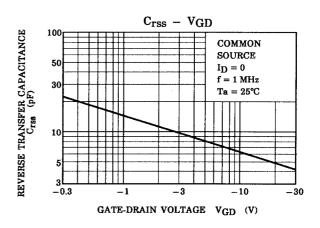


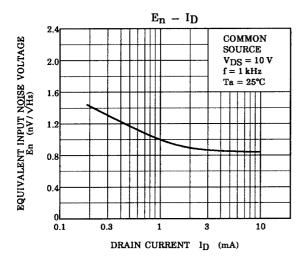


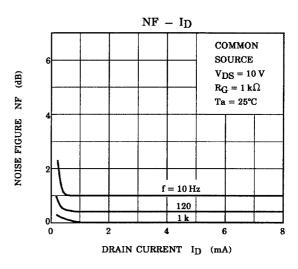


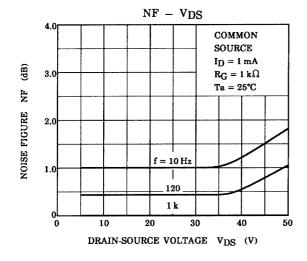
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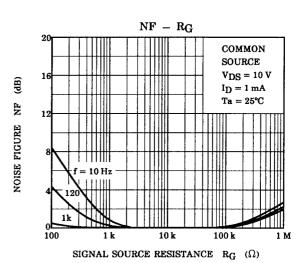




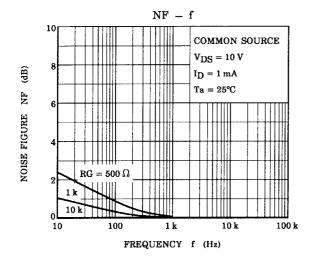


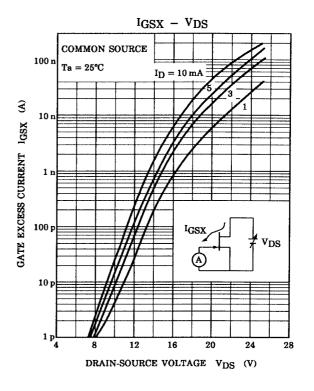






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